AD NUMBER

AD831191

NEW LIMITATION CHANGE

TO

Approved for public release, distribution unlimited

FROM

Distribution authorized to U.S. Gov't. agencies only; Administrative/Operational Use; APR 1968. Other requests shall be referred to Hqs US Coast Guard, Office of Engineers, Washington, DC 20591.

AUTHORITY

US Coast Guard ltr dtd 22 Nov 1974

United States Coast Guard

Office of Engineering

FIELD TESTING AND DEVELOPMENT CENTER

REPORT NO. 476

PROJECT 3981/01/39

APPROVAL TESTS OF SUPERIOR SIGNAL COMPANY
FLOATING ORANGE SMOKE DISTRESS SIGNALS
APPROVAL NO. 160.222/2/1, LOT NO. 75 OF JANUARY 1968

5 APRIL 1968

Releasable to Government Agencies only

[redacted]

Washington, D.C.
20226

UNITED STATES COAST GUARD

FIELD TESTING AND DEVELOPMENT CENTER

TEST REPORT

PROJECT 3981/01/39

APPROVAL TESTS OF SUPERIOR SIGNAL COMPANY FLOATING ORANGE SMOKE DISTRESS SIGNALS APPROVAL NO. 160.022/2/1, LOT NO. 75 OF JANUARY 1968

By

CHBOSN R. E. BUZHARDT, JR.
Project Officer
Field Testing and Development Center
Baltimore, Maryland 21226

Date: 5 APRIL 1968

Submitted: _____

R. W. WITTER, CDR, USCG
Commanding Officer
Field Testing and Development Center
Baltimore, Maryland 21226

Date: APR [illegible]

Approved: _____

A. H. SIEMENS, CAPT, USCG
Chief, Testing and Development Division
Office of Engineering
U. S. Coast Guard Headquarters
Washington, D.C. 20591

Authority: Comdt(ETD) ltr 3981/01/39 ser 5505 of 13 Feb 1968

ABSTRACT

This report covers the testing of Floating Orange Smoke Distress Signals for compliance with Coast Guard Specifications Subpart 106.022, of CFR Title 46. Signals were manufactured under Coast Guard Approval No. 160.022/2/1 by Superior Signal Company, Inc., Spotswood, New Jersey and were taken from Lot No. 75 dated January 1968.

The samples tested failed to meet the requirements of the appropriate Coast Guard specification for both operational test and technical tests.

TABLE OF CONTENTS

1. INTRODUCTION:

The purpose of these tests was to determine the compliance of Signals, Distress, Floating Orange Smoke with Coast Guard Specifications. A complete description of the signals tested is included in Appendix A.

2. MATERIAL UNDER TEST:

The material under test consisted of a sample lot of Superior Model OS-5 floating orange smoke distress signals, encased in cylindrical metal containers painted gray. Directions for use were plainly marked in black lettering on the side of the container. Manufacture was intended to comply with Coast Guard Specifications, Subpart 160.022, dated 31 October 1947, 5th Amendment dated 11 September 1962.

3. TEST CONDUCTED:

Fifteen (15) floating orange smoke distress signals were tested in accordance with U. S. Coast Guard Specifications for Signals, Distress, Floating Orange Smoke for Merchant Vessels, Subpart 160.022, Subparagraph 4(c)4. The following tests were conducted.

OPERATIONAL TEST:

Eight (8) specimens were subjected to the water resistance conditioning in accordance with paragraph 160.022-4(d). Following the conditioning the below tests were conducted:

Kind of Test	Applicable Paragraph of Specification
Ignition and smoke emitting and smoke emitting time.	160.022-4(e) and (f)
Underwater smoke emission.	160.022-4(g)
TECHNICAL TEST:	
Elevated temperature humidity and storage	160.022-4(h)
Spontaneous Ignition	160.022-4(i)
Susceptibility to explosion.	160.022-4(j)

Kind of Tests	Applicable Paragraph of Specification
Corrosion, color and volume and density	160.022-4(k), (l) and (m)
Color and volume and density	160.022-4(l) and (m)

4. TESTS RESULTS:

The results of all tests are detailed in Appendix A. These test results are listed and described using the corresponding paragraph designation and description contained in the applicable Coast Guard Specification. A detailed description of the test procedure in each case is contained in the specification. Specimens were picked at random from the fifteen specimens for the various tests and numbered 1 through 15 for identification purposes.

5. DISCUSSION OF RESULTS:

In the operational tests the two specimens that failed were examined and found that the ignition mechanism failed to ignite the fuse. In the technical test, following the elevated temperature, humidity, and storage conditioning, Specimen No. 1 failed to ignite. Following the corrosion resistance conditioning, Specimen No. 5 showed less than 20% transmission for only 2 minutes 8 seconds, this is less than the required 3 minutes.

Subparagraph 3(c) of the specification states that the watertight covers protecting the igniter mechanism shall be easily and quickly removable by hand without the use of a tool. A tool was required to open eight specimens of this sample lot. The metal tab gripped with the fingers to remove the locking device around the cap could not be removed without a tool and in some instances it tore into two parts leaving jagged metal edges.

6. CONCLUSIONS:

Floating orange smoke distress signal for Merchant Vessels, Lot 75 of January 1968, manufactured by the Superior Signal Company, Inc. under Coast Guard Approval No. 160.022/2/1 failed to meet the requirements of both the operational and technical tests, hence, the sample lot is considered to be unsatisfactory.

In addition, the sample lot failed to meet all the requirements of Subparagraph 160.022-3(c) of the specifications.

APPENDIX A

Test Data Sheet

TEST DATA SHEET

1. MATERIAL TESTED:

The material tested was Model OS-5, Floating Orange Smoke Distress Signals, manufactured under U. S. Coast Guard Approval No. 160.022/2/1, by the Superior Signal Company, Inc., Spotswood, New Jersey. Specimens tested were from Lot No. 75 dated January 1968.

2. TEST CONDUCTED AND RESULTS:

a. 160.022-4(b)(1) - Operational Tests:

(1) Ignition and smoke emitting characteristic, and smoke emitting time (after conditioning).

Specimen Number	Burning Time M.	S.	Ignition and Smoke Emitting Characteristics	Kind of Defect	Percent of Failure
6	6	5	Good	None	-
7	5	50	Good	None	-
8	5	35	Good	None	-
9	-	-	-	Failed to ignite	100
10	5	32	Good	None	-
11	-	-	-	Failed to ignite	100
	(2) Underwater Smoke Emission:				
12	7	50	Good	None	-
13	5	50	Good	None	-

In accordance with paragraph 160.022.4(b)(1)(iii) the average percentage of failure is computed to be 25 percent which exceeds the tolerable allowance of 15 percent.

b. 160.022.4(b)(2) - Technical Tests:

(1) Elevated Temperature, Humidity and Storage (operation after conditioning).

Specimen No. 1 - Unsatisfactory - Failed to ignite following elevated temperature, humidity and storage conditioning.

Specimen No. 2 - Satisfactory.

(2) Spontaneous Ignition:

Specimen No. 3 - Satisfactory

Specimen No. 4 - Satisfactory

(3) Susceptibility to Explosion:

Specimen No. 14 - Satisfactory

(4) Corrosion, Color and Volume and Density:

Specimen No. 5 - Unsatisfactory - failed to meet the requirements of volume and density of smoke in accordance with subparagraph 160.022-4(m). Specimen showed less than 20% transmission for only 2 minutes, 8 seconds.

Specimen No. 15 - Satisfactory.

c. 160.022-4(b)(2)(ii) - No deviations from the requirements are permitted for these tests.

FIGURES 1 AND 2 - FAILED TO IGNITE.

FIGURE 3 - FAILED TO IGNITE.